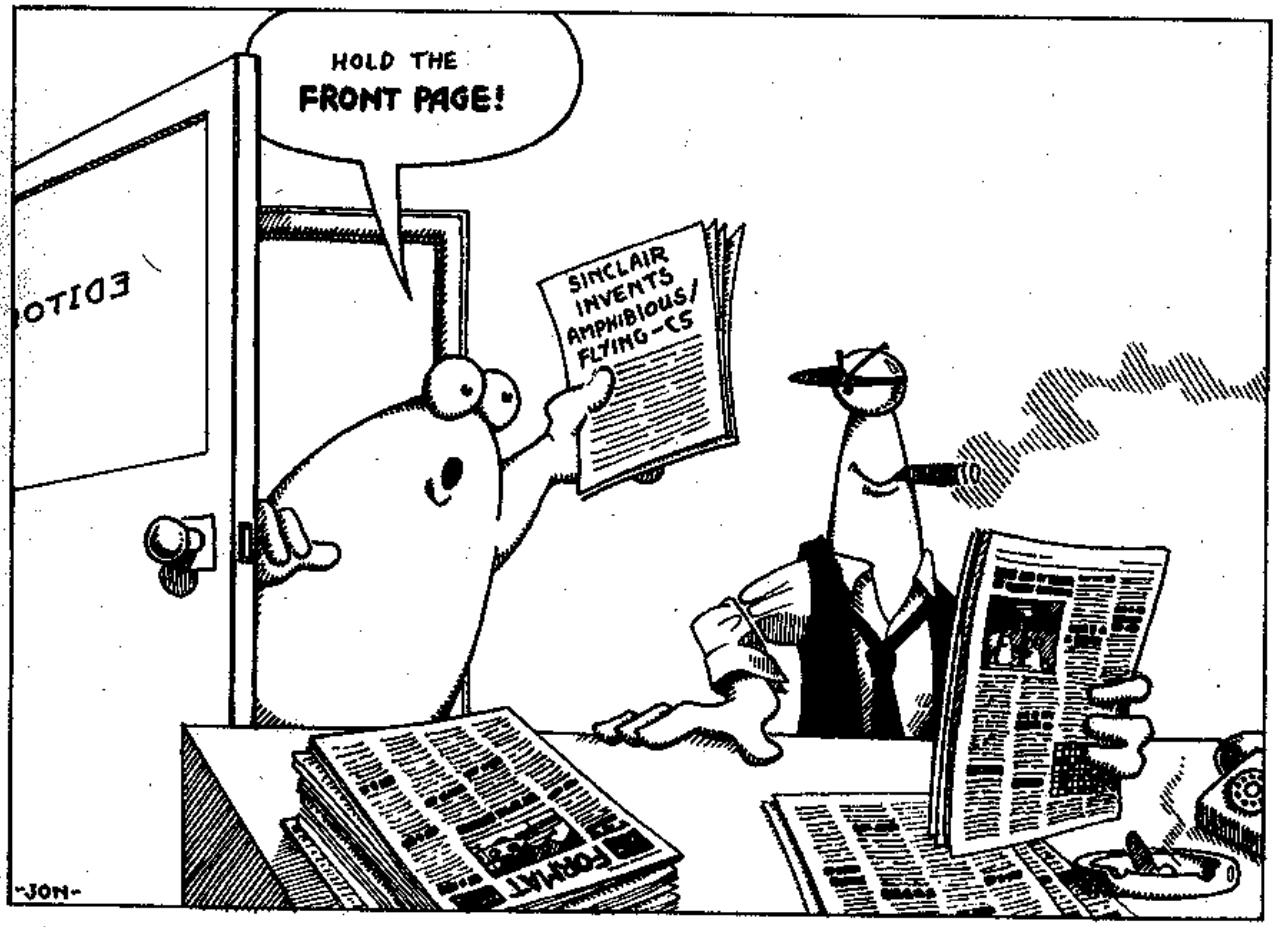
Vol 3 – No 7. March 1990.

FORMAT

FOR SPECTRUM AND SAM USERS



Desk Top Publishing With Your Spectrum

PCB DESIGNER

FOR THE 48K ZX SPECTRUM

Now you can produce high quality printed circuit boards/circuit diagrams/component layouts on your 48K ZX Spectrum. If you don't own one it's worth getting one just for this suite of programs!

Comprehensive manual included with getting started tutorial.

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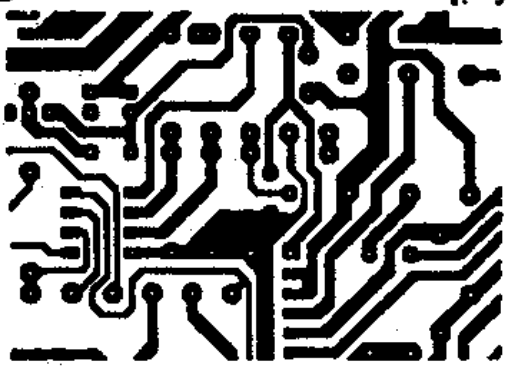
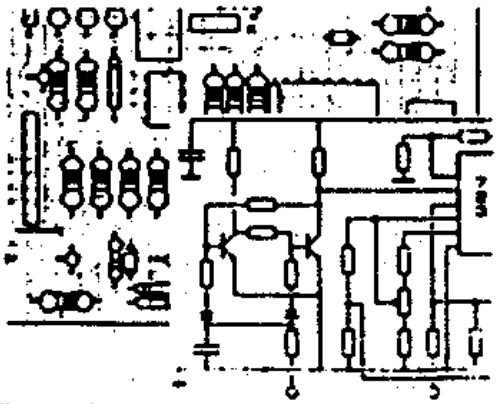


COMPONENT LAYOUT

Draw component layouts directly or from existing pcb layouts using a unique track reducing facility. The following components are provided: resistors, capacitors, ics, diodes, transistors, line drawing, printout and block commands as above. Not available separately.



CIRCUIT DIAGRAMS

Features similar to the above programs with a library of electronic symbols including resistors, capacitors, diodes, transistors, fets, op amp, switches, inductors, logic gates. Not available separately.

State version required from: Disciple/+D; Discovery; +3; Microdrive & Tape. *Important! Tape and Microdrive users please state Centronics interface in use or send £1 for details.*

KEMSOFT THE WOODLANDS, KEMPSEY, WORCESTER WR5 3NB. Tel. 0905 821088 after 6 p.m., or see us on A.I.X-386 BULLETIN BOARD 0905 52536/754127 on any computer with modem.

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NEWS ON 4

UNI-DOS COMING SOON.

Stephen Warr's excellent series 'Inside G+DOS' has been missing from FORMAT for a few months - partly due to him starting at Cambridge University and partly due to his work on a new project - UNI-DOS.

UNI-DOS is designed to unite DISCiPLE and PLUS D users with a powerful new DOS that provides things like Random Access Files, Sub-directories and lots of other powerful features. The new DOS will be available as an upgrade around July this year and will consist of a new ROM, System tape and Manual. More details as they become available.

NEW EMULATOR LAUNCHED.

MGT have sent out the new version of the Spectrum Emulator software for the SAM Coupé. Version 2 contains many improvements over the original program and now allows about 80% of 48k games software to run on SAM.

10 YEARS ON.

Ten years ago this month the first ZX80s were rolling off the production line at Sinclair Research. The ZX80 was Uncle Clive's second computer and the first to have any real impact.

For less than £100 you could buy a 1K black and white computer to use with your own telly in your own home. A revolution had started, although it lacked real steam until the launch of the ZX81 the following year. Just think, without the ZX80 you could now be using a TRS80 model 23 instead of your beloved Spectrum or SAM.

SAVE/LOAD SWITCH.

Because the Coupé only has a single cassette socket you need to keep swapping the cassette lead from the ear to mic sockets on your recorder, and then back again. Well D.J.C. to the rescue, Dilwyn Jones Computing has just announced the SAM-SAVE-SWITCH costing £5 in easy-build kit form or £7 ready to use, both prices include postage and packing.

D.J.C. can be contacted at 41 Bro Emrys, Tal-y-Bont, Bangor, Gwynedd, Wales, LL57 3YT.

NEXT ALL FORMAT SHOW.

Following close on the success of the first All Formats Computer Fair (See report in this issue) the organizers have announced the next one.

The second show will be held, again, at the New Horticultural Hall in London and this time will be a two day affair. The dates for your diary are Saturday and Sunday the 28th and 29th of April.

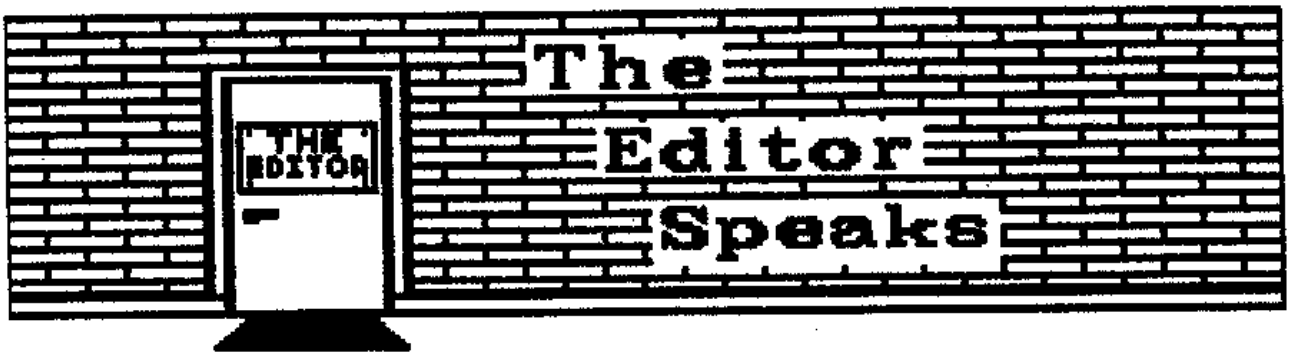
+3 DISC PROBLEMS.

It seems that Amstrad have problems with their +3 disc drives again. Rumours are circulating that new machines (in the Action Pack) suffer from formatting problems. It appears that discs formatted on one machine will not always work on others and produce sector errors.

THE RETURN OF MONTY MOLE.

Remember Monty Mole? Star of several games way back in 1984/85. Well, publishers Gremlin are planning a new game for later this year. Gremlin are also talking to a television company about a cartoon series for Monty.

URGENT we need your news. Clubs, Shows, New Releases, anything you think other people should know about. If you have any news items you want to pass on then send them in. Please mark



Last month I promised I would tell you who won our POT of GOLD in the Autumn Subscription Drive. Well the lucky person was Alister Marsh of Weston Super Mare in Avon, who scooped the jackpot of £63. Alister has been a FORMAT reader for nearly two years and introduced both his brother and a friend from work to his favourite magazine. Alister was not the only one to introduce more than one person (the record was 4) and overall 126 new members resulted from the Autumn drive.

MGT have now sent out the first version of the DOS for the SAM Coupé. Now it was always understood that this first draft would not see any new features over the DISCiPLE or PLUS D systems - but it has come as a great disappointment to many people that SAM DOS doesn't even come up to its predecessors standards. OPENTYPE files are conspicuous by their absence, but - more importantly - the syntax of those commands that are left is no longer as 'user friendly' as the Spectrum versions. Take the command LOAD P6 for instance, in GDOS this meant LOAD Program 6, or to look at it another way LOAD something from Position 6 on the disc. On SAM you now type LOAD 6, load 6 what? 6 apples? 6 bytes? The command has lost its Memonic nature and with that its user friendliness. Other commands look equally bad, FORMAT d2 now has to be typed as FORMAT "d2:" and for some unknown reason CAT (which has been good enough for every disc system so far) has been replaced with DIR. Why?

No-one I have spoken to so far has liked the change. In places the syntax of SAM DOS is even less friendly than MS DOS. However, I only tend to hear from people with problems so maybe other people are happy with the new system. So come on all you SAM users out there, write to me at FORMAT and give your views, do you like the new DOS or don't you. I will collate your comment (good or bad) and pass them on to MGT.

While on the subject of the SAM Coupé I would like to explain that all SAMs shipped by MGT contain a subscription leaflet for FORMAT. This offers a free software tape to new subscribers which, as yet, is not ready (I only got my disc dives in mid Feb like the rest of you, so I am way behind target). I will try to get the tape ready for dispatch at the end of March if all goes well. The tape will contain a useful utility program, and some demo routines that will really amaze you. Meanwhile if any existing readers have purchased a SAM Coupé and want a copy of the tape, just send me a letter together with four 20p stamps (to cover postage and packing) and I will add you to the mailing list ready for when the tape is finished, remember to quote your membership number.

I have had many requests for a regular feature on what I call Mind-Game, things like Chess, Strategy, Management games etc. I'm looking for a writer, Anyone interested?

In closing this month I would like to thank everyone who came along to the All Formats Computer Fair on the 10th Feb. It was good to see so many FORMAT readers, both old and new. Let's hope these shows become regular events.

Bob Brenchley. Editor.

YOUR LETTERS

*STAR*LETTER* *STAR*LETTER*

Dear Editor,

I have received my Coupé and am quite impressed with it. Of course I didn't waste any time before entering the SPECCYROM routine from the January issue of FORMAT, however its use is rather limited with some programs as the Coupé is running too fast. I have worked out the pokes which seem to do the trick, I hope they will be of interest to other users.

First load the copy of the SPECCYROM at 65536 then poke:-

SAVE_POKES	LOAD_POKES
66783,219	66954,147
66793,63	66960,190
66801,74	67015,172
66808,79	67028,170
66841,88	
66847,92	
66862,66	
66875,79	

Now save a copy to tape by SAVE "SPECCYROM" CODE 65536,16384 and you will have a working version. Some of the values, especially in the LOAD routine, are not optimal but they seem to work for me.

I look forward to reading more articles on the SAM Coupé in FORMAT.

Yours Sincerely, Ian Spencer.

Thanks Ian, I'm sure many people will value your pokes. Ed.

Dear Editor,

I should just like to say how very much I enjoy the articles of Carol Brooksbank which are, for me, so fascinating and helpful. I have blatantly plagiarized from her to make the mock-up of the local church Christmas newsletter as you will see from the enclosed draft. The single humped camels have, however, been changed into authentic dromedaries.

There was mention in an earlier article (on Spectrums in the Library) of a program called 'Icon Graphix 128'. Is it possible that one could kindly tell me from where it might be obtained?

Yours Sincerely, Ian Ross.

Icon Graphix 128 was published in 1986 by Audiogenic Software, P.O. Box 88, Reading. I don't know if it is still available, maybe one of our readers can point you in the right direction. Ed.

Dear Editor,

You have been promising binders for FORMAT for some months now. When will they be coming, some of my FORMATs are getting a bit tatty, is this a plan to sell more back issues?

Yours Sincerely, Sean Thomas.

Sorry Sean, the original supplier I found is no longer producing the A5 binder. I have found someone else so they wont be much longer. Ed.

Dear Editor,

Years ago there was lots of business software available for the Spectrum but at that time I was only interested in games. Now that I want to use my computer for serious things I can't find software anywhere, except Wordprocessors and Database programs that is.

The programs I really need are Invoicing, Small Accounts and Stock Control. Ideal programs would be in Basic so I could customize them. Do any readers know where I can find programs that fit the bill?

Yours Sincerely, S.D.Walton.

Letters printed may be edited for length or clarity. The writer of each months STAR LETTER wins an EXTRA 3 months subscription to FORMAT.

SHORT • SHOT

By:- John Wase.

Hi, folks. It's no good: Wase has now to admit it. He's growing positively geriatric. Let me tell you. The other day I was using Simon Turton's invaluable "Bannerman" to make some programs for my wife's School Displays. Bannerman warns you about use of ribbons (more hints below), for it uses the printer pretty intensively. Being in my customary hurry, I set up a message and left my trusty old FX80 hard at it. I should have checked more carefully. I would, had I not been going *******! The upshot of this sad tale is that the printer wound its paper round and round the roller, jammed solid, the print head scored a hole in the paper and the ribbon, and shorted one of the pins and blew a transistor. An expensive piece of carelessness indeed, since a new head is around sixty quid, to get a piece of 1982 technology working again.

So, lets get on to all these printer comments I've had. Firstly, Malcolm Perry of Kidderminster mentions that it is possible often to buy old pattern ribbons at knockdown prices and transfer the spool of nylon fabric to your own cassette. And Bob Bates of Nottingham once again advocates the method of opening the ribbon cassette and giving a very sparing spray with WD40. I still recommend Caspell Computer Services "ribbon refresh". Whatever you use, however, it is essential that in the end, the ribbon is of the correct fabric density, the correct length, and width, with a seam which is not disproportionally thick, appropriately lubricated, and in an undamaged cassette. Malcolm suggests giving the ribbon a good wind by hand to check. I have found that on many ribbons, it's all too easy to break the plastic pin off the lid where the ribbon leaves or re-enters the cassette: it will jam here. This brings me back full circle to the consequences of a jam: it may cost you more to repair than the printer is worth: beware!

Whilst on the subject of hardware, I would like to ask readers about their experience of discs. These have come down in prices so that 3.5" discs can be obtained for little more than 30p each, and 5.25" at 18p. I tend to buy cheap discs, archive separate programs on separate discs, and also keep a backup, and I must say I've had no trouble. The Chemical Engineering Computer room (who buy expensive discs from the University suppliers) recently had a batch - just one batch - which gave formatting problems. I suspect that errors tend to run in batches rather than individual discs, and that cheap ones work as well as expensive ones. What readers think?

On the other hand, I frequently find errors in discs I receive. I know that my two 3.5" drives are slightly different, for discs which give an error on one drive can often be read on the other. My answer is to copy them across. If you've got a dodgy drive, the answer is to keep the case and power supply unit, and to change the mechanism. I have had good service from Pinboard, who frequently advertise, and also "Just Drives" of 243, Cheam Common Road, Worcester Park, Surrey KT4 8ST. Incidentally, whilst my wife was away, ill, some of the schoolchildren vandalised in some way her old Discovery: "Just Drives" is one of the few firms I know that still sells the old 40 track drives it uses: it cost me fifty quid, but she can now read all her old discs again.

Let's get down to the software, now. Still on the subject of discs and drives, Nev Young writes about a bug in the 1772 disc controller chip. This

chip is used by many computers, not just the Disciple/+D. In this chip is a command "Read Track". Nev was trying to use this facility to find out why there are so many "sector data lost" errors on the Disciple/+D system: the command reads an entire track into memory, from index to index and it contains all the track formatting data and inter sector gap data. You start it by sending the command word 1110he00 where h=1 for disc spin-up delay and 0 for no spin-up. If you invoke a spin-up delay then this is standard for e=0, whereas e=1 adds an additional 15ms delay. As Nev remarked, this seems to work quite well and and the track formatting info can be seen. However, when Hugh McLenaghan tried to use it for a sector repair program, he found that after certain byte patterns in the data, the chip lost sync and was unable to read any more data until it encountered the three "A1" sync bytes.

On closer investigation, they found that the binary pattern 000101001 anywhere in the data caused the difficulty. So far, these two bright lads have not found a way round this problem, and have therefore been unable to come up with a sector repair routine, but they're clever devils, and I really wonder if this niggle will defeat them for ever.

Now for something really useful. Wouldn't it be nice to load a sector from a disc directly into a data array. The command LOAD @d,t,s,a$ would be very nice, wouldn't it. Well, Nev's virtually done it. Try the following:-

```
DIM A$(512): LET A$( TO 5)=PEEK 23629+
256*PEEK 23630: LOAD @D,T,S,VAL A$( TO
 5)
```

A$ now contains the raw disc sector. So A$(511) is the next track and A$(512) is the next sector of the file. This could be the start of a disc based database. Or to read through a directory [A$(2 TO 11) and A$(257 TO 268) hold the file names]. This routine is much faster than loading into memory and peeking to get at the filenames.

Many thanks for the tips, Nev.

Whilst I'm having a go at Nev, I ought to mention a little note from W.Ettrick Thomson (well known for his spirited correspondence in Beta Basic Newsletter), who points out that in Nev's very useful article on sorting, (FORMAT, Jun 89, p21), he mentions that finding the correct place for a new number in an already sorted array can be done very quickly by the "Binary Chop" search method. However, you don't, as Nev suggested, necessarily need an array whose length is a power of two.

In the program below, the subroutine in lines 200-260 locates the place of a new number, q, in the sorted elements a(1) to a(n) of an array a(): n can be anything you like. On return, q's place is generally between a(try) and a(try+1); but if try=0, then q is less than a(1); and if try=n, q is greater than a(n). The variable "flag" is also set, being 2 if q is actually equal to a(try), and 0 if q does not occur in a(). This may be useful if you want to do something different if the number q is already there; if you don't care, you can delete "LET flag=0:" and "LET flag=1:" from lines 220,230, but don't be tempted to combine these lines by "IF try=lo OR a(try)=q THEN RETURN", for you'll get a "Subscript wrong" stop if q is less than a(1). To demonstrate the program, line 210 contains ":PRINT try;" ";", to show the progress of the search; this is not, of course, needed in actual use.

In the Demonstration Program, the sub- routine of lines 300-340 is used to fill the first 100 elements of a() with a random selection of integers in the range 1-200, already sorted; this takes about six seconds. Then, you keep on trying numbers q to see where they should go, entering the Binary Chop subroutine with n=100; q can be any number, positive or negative, integer or with a decimal point.

In actual use, q would be inserted

in its proper place, making 101 sorted elements of a(); if a further new number arose, then the Binary Chop subroutine would be entered with n=101.

```
  5 REM ******BINARY CHOP DEMO*******
  6 REM *********W.E.THOMSON*********
  7 REM
 10 DIM A(200)
 20 LET M=200: LET N=100: GOSUB 300
 30 PRINT "A(1)=";A(1),"A(100)=";A(10
    0)
 40 INPUT "New number,Q:";Q: PRINT Q
 50 LET N=100: GOSUB 200
 60 IF FLAG THEN PRINT '"Q=A(";TRY;")
    ; check: A(";TRY;")=";A(TRY)
 70 IF NOT FLAG AND 0<TRY AND TRY<100
     THEN PRINT '"Q goes between A(";
    TRY;") & A(";TRY+1;")"'"check: A(
    ";TRY;") =";A(TRY);",A(";TRY+1;")
    =";A(TRY+1)
 80 IF NOT FLAG AND TRY=100 THEN PRIN
    T '"Q is less than A(1)"
 90 IF NOT FLAG AND TRY=0 THEN PRINT
    '" Q is greater than A(100)"
100 GOTO 40
198 REM
199 REM Binary Chop Subroutine*******
    *
200 LET LO=0: LET HI=N+1
210 LET TRY=INT ((LO+HI)/2): PRINT TR
    Y;" ";
220 IF TRY=LO THEN LET FLAG=0: RETURN
230 IF A(TRY)=Q THEN LET FLAG=1: RETU
    RN
240 IF A(TRY)<Q THEN LET LO=TRY
250 IF A(TRY)>Q THEN LET HI=TRY
260 GOTO 210
298 REM
299 REM INITIALISE*******************
300 LET J=N
310 FOR I=M TO 1 STEP -1
320 IF RND*I<J THEN LET A(J)=I: LET J
    = J-1
330 NEXT I
340 RETURN
```

SLIGHTLY LONGERSPOTS:- I have received over the last few months a selection of longer programs which are rather outside the original concept of short programs intended for publication in "SHORTSPOT". Thing is, it's a shame to waste them, so I'm going to include one or two, when I have room, under the heading of "LONGERSPOT". So come on, now's your chance: send that program lurking in the depths of your disc box to me or to FORMAT. Just one thing, though. It's totally tortuous to have to type in great sheets of Basic to test, and then convert the lot to ASCII afterwards for a Tasword file to entrust to the postman. So perleaze, perleaze, do send me either a disc or a cassette; it makes things so much easier.

The first program came in just after I'd sent Daniel Neidle's "Sideways Posterprint" down to Bob. Yes, you've guessed it; it's another banner program, called approriately enough, "BANNERMAKER", by Keith Pirie of Aberdeen. Here it is.

```
  5 LET p$="
          ": LET a=0: LET w=0: LET x$
    =""
 10 POKE @6,0: POKE @8,1: POKE @7,6
 50 PAPER 5: INK 0: BORDER 6: CLS :
 55 PRINT AT 0,9; INK 2; PAPER 7; BRI
    GHT 1;" BANNER  MAKER "
 65 PRINT AT 1,9; INVERSE 1;" {ESS P}
    1989 K.Pirie "
 70 PRINT AT 10,0;"  This program al
    lows you to      create your own
    banners on       any ""Epson"" c
    ompatible              printer
    ."
 75 GOSUB 9000
 80 PRINT AT 10,0;"  Input the conte
    nt of your      banner. It must n
    ot exceed       30 characters in
     length."
 85 POKE 23617,236: INPUT  LINE m$
 90 IF LEN m$>30 THEN PRINT AT 17,12;
     FLASH 1;"TOO LONG": BEEP 3,-5: P
    AUSE 700: PRINT AT 17,12;"
     ": GOTO 85
 95 IF m$="" THEN GOTO 85
100 GOSUB 9005: PRINT AT 10,0; INVERS
    E 1;"Your message is "'' INVERSE
    0;m$'' INVERSE 1;"Please Confirm
    (Y/N)"
105 IF INKEY$="y" OR INKEY$="Y" THEN
    GOTO 120
110 IF INKEY$="n" OR INKEY$="N" THEN
    GOSUB 9005: GOTO 80
115 GOTO 105
120 GOSUB 9005
130 PRINT AT 6,3;"Now you can choose
    how to          letter your bann
    er."
140 PRINT '"1.....Using Blocks ({GS 8
```

```
    })"'"2.....Using ""X""""'"3.....
    Using Your Character"'"4.....Usi
    ng Banner Letters"'"5.....Using
    a Message"'"6.....Choose Colour
    Printer"
 145 IF INKEY$="1" THEN LET type=1: GO
    TO 200
 150 IF INKEY$="2" THEN LET type=2: GO
    TO 200
 155 IF INKEY$="3" THEN LET type=3: GO
    TO 200
 160 IF INKEY$="4" THEN LET type=4: GO
    TO 200
 165 IF INKEY$="5" THEN LET type=5: GO
    SUB 300: GOTO 200
 170 IF INKEY$="6" THEN GOTO 8000
 180 GOTO 145
 200 IF type=4 OR type=5 THEN LET w=0
 205 IF type<>4 AND type<>5 THEN GOSUB
     4000
 210 GOTO 900
 300 GOSUB 9005: PRINT AT 10,2;"What i
    s your second message": INPUT  LI
    NE x$
 305 RETURN
 905 PRINT AT 21,0;m$
1010 FOR m= 0 TO (LEN m$*8): LET p$="
                                    "
1012 IF type=4 AND m/8 =INT (m/8) THEN
     LET w=w+1: GOSUB 4200
1015 LET a=0: FOR n= 0 TO 7
1020 IF POINT (m,n)<> THEN GOSUB 2000
1030 IF POINT (m,n)=0 THEN GOSUB 2050
1035 NEXT n
1040 GOSUB 3000
1055 NEXT m
1060 GOTO 75
2000 LET a=a+1: LET p$(a)="1"
2005 RETURN
2050 LET a=a+1: LET p$(a)="0"
2055 RETURN
3010 FOR o=1 TO 3
3015 IF type=5 AND p$(1 TO 8)<>"000000
    00" THEN LET w=w+1
3020 IF type=5 THEN GOSUB 4200
3025 FOR n=1 TO 8
3030 IF p$(n)="1" THEN LPRINT v$;
3035 IF type=1 AND p$(n)="0" THEN LPRI
    NT "         ";
3040 IF type<>1 AND p$(n)="0" THEN LPR
    INT "         ";
3055 NEXT n
3060 LPRINT : NEXT o
3065 RETURN
4000 IF type=1 THEN LET v$="{7 off GS
    8}"
4005 IF type=2 THEN LET v$="XXXXXXXX"
4010 IF type=3 THEN GOSUB 4100
4020 RETURN
4100 GOSUB 9005: PRINT AT 10,3;"What c
    haracter do you wish        to us
    e?"
4105 POKE 23617,236: INPUT  LINE g$
4110 LET v$="        ": FOR t=1 TO 8:
    LET v$(t)=g$: NEXT t
4120 RETURN
4205 IF w<2 THEN LET w=1
4210 IF type=4 AND w>LEN m$ THEN LET w
    =LEN m$
4215 IF type=5 AND w>LEN x$ THEN LET w
    =1
4220 IF type=4 THEN LET v$="        ":
     FOR t=1 TO 8: LET v$(t)=m$(w): N
    EXT t
4225 IF type=5 THEN LET v$="        ":
     FOR t=1 TO 8: LET v$(t)=x$(w): N
    EXT t
4230 RETURN
8000 GOSUB 9005: PRINT AT 7,0;" STAR L
    C10  Colour Option "
8005 PRINT '"   Choose the colour requ
    ired"'"   0...Black      1...Red
    "'"   2...Cyan       3...Blue"'
    "   4...Yellow     5...Orange"'"
       6...Green"
8100 INPUT "Colour (0 to 6) > ";z
8105 POKE @6,1: LPRINT CHR$ 27;"r";z:
    POKE @6,0
8115 GOTO 120
9000 PRINT #1;AT 0,0; FLASH 1;"   PRES
    S ANY KEY TO CONTINUE",: PAUSE 0
9005 FOR N= 4 TO 21: PRINT AT N,0;"
                                    ": N
    EXT N: RETURN
9100 FOR n = 0 TO 7: INPUT y: POKE USR
     "b"+n,y: NEXT n
9999 SAVE "banner" LINE 1: VERIFY "ban
    ner": STOP
```

{GS 8} = Graphics Mode then Cap Shift 8 (the square block)
{ESS P} = Extended Mode Symbol Shift P (the Copyright sign).

To get BANNERMAKER working on a SAM Coupé add a new line 1 to the program then change lines 10 & 8105 to read:-

```
   1 MODE 1
  10 CLOSE #3: OPEN #3;"p"
8105 OPEN #4;"b": PRINT #4;CHR$ 27;"r"
    ;z: CLOSE #4
```

Send items for SHORT SPOT to:-
John Wase, Green Leys Cottage, Bishampton, Pershore, Worcs, WR10 2LX.

+3 DISC UTILITIES

By:- Ian Cull.

The Spectrum +3 is a curious machine. Many parts of its design are very powerful, and yet there are a lot of omissions. Much of the areas in which the +3 falls down are due to its (attempted) compatibility with earlier Spectrums.

The built-in disc drive is a VERY useful device, except that its access from +3Basic is extremely limited. Only the bare essential functions (SAVE/LOAD/MERGE, FORMAT and CAT) are supported. There is no way for +3Basic to PRINT to or INPUT from data files on the disc, nor is there any way for individual sectors to be accessed.

However, deep inside the +3 are all the routines needed to do these functions, and many others. I have written routines to format a disc to 192Kbytes (available on OUTLET disc #26) and to redirect printer output to a disc file. Now here are two routines to get from disc and put to disc any required sector. These routines can be used quite easily, but I have also written a +3Basic program which can examine a files entry in the disc directory and even recover the file if it has been deleted.

These functions are similar to the SAVE@ and LOAD@ functions built in to the Plus D. However, as I have not yet worked out how to add commands to +3Basic, I have implemented them as USR calls. Before calling either GET or PUT, first LET T = track number to read (1 to 40) and LET S = sector number (1 to 10). Also DIM D$(512) for use as a buffer. To make life easier, LET GET = 23734 and LET PUT = 23737.

To install GET & PUT, type in the program SAVELOAD. When run this will install a 400 byte routine at address 60000 (which you should save as SAVELOAD.BIN CODE 60000,400). When run, using PRINT USR 60000, the GET & PUT routines are installed just before the channel data, shifting any +3Basic program up by 333 bytes. If you get an 'Out Of Memory' error then something is already installed in that area (e.g. you have already installed the routines which are only lost with NEW).

Once the necessary setting up has been done, RANDOMIZE USR GET will read the required 512 byte sector into array D$, and RANDOMIZE USR PUT will write the array contents back out to the disc (use this with EXTREME caution!). Errors possible at this time include (as well as any disc error) 'Integer Out Of Range' if the track or sector number are not valid, 'Variable Not Found' if variables D$, S or T have not been set up, and 'Subscript Wrong' if D$ is not a single 512 byte array. 'Out Of Memory' could also occur if a very large +3Basic program means that the D$ array is above the 48K boundary.

There is also a +3Basic program which uses these routines to scan a disc directory for details on a file. When run, a filename should be specified (do not use wildcards). The program will then check all 64 possible directory entries and give any details relating to the file specified. If the file is deleted, the program gives the chance to recover it, provided that no other file is using the same disc areas. If you read through the program, you may get some idea of how the +3DOS disc directory is structured - anyone with CP/M or Amstrad CPC experience will notice a remarkable resemblance!

If there is enough interest from readers, a full discussion of the +3DOS disc format, and details of how the GET & PUT routines work, will

appear in a later issue of FORMAT.

Type in the following ...

```
 10 REM Loader for SAVELOAD.
 15 REM Ian Cull Bsc. 21/1/90.
 20 CLEAR 59999
 30 LET ADR=60000: LET LNUM=1000
 40 READ A$: IF A$="END" THEN GOTO 20
    0
 50 LET A=LEN (a$)
 60 IF A$(A-2)<>"=" THEN PRINT "Missi
    ng = in line ";LNUM: STOP
 70 IF A/2=INT (A/2) THEN PRINT "Wron
    g length in line ";LNUM: STOP
 80 LET CK=0: FOR X=1 TO A-3 STEP 2
 90 LET N1=CODE (A$(X))-48: IF N1>9 T
    HEN LET N1=N1-7
100 LET N2=CODE (A$(X+1))-48: IF N2>9
     THEN LET N2=N2-7
110 LET N=N1*16+N2
120 POKE ADR,N: LET ADR=ADR+1
130 LET CK=CK+N: IF CK>255 THEN LET C
    K=CK-256
140 NEXT X
150 LET C1=CODE (A$(A-1))-48: IF C1>9
     THEN LET C1=C1-7
160 LET C2=CODE (A$(A))-48: IF C2>9 T
    HEN LET C2=C2-7
170 IF C1*16+C2<>CK THEN PRINT "Check
    sum error in line ";LNUM: STOP
180 LET LNUM=LNUM+10
190 GOTO 40
200 IF ADR<>60333 THEN PRINT "Missing
     data somewhere !": STOP
210 PRINT "USR 60000 to install poked
     code ...": STOP
999 REM
1000 DATA "2A4F5C11B65CA7ED=8C"
1010 DATA "522802CF03EB0188=C2"
1020 DATA "01CD5516213E5E22=18"
1030 DATA "4F5C2189EA11B65C=62"
1040 DATA "018801EDB0012A00=52"
1050 DATA "C9C3745DC3A65D00=23"
1060 DATA "0000000000ED73BC=1C"
1070 DATA "5C313E5EF5C53A5C=79"
1080 DATA "5BF607CBA701FD7F=47"
1090 DATA "F3325C5BED79FBC1=FE"
1100 DATA "F1CDFB5CF5C53A5C=65"
1110 DATA "5BE6F8CBE701FD7F=68"
1120 DATA "F3325C5BED79FBC1=FE"
1130 DATA "F1ED7BBC5CC9FDE9=20"
1140 DATA "3E74CD175DFE2930=4A"
1150 DATA "2232BE5CC93E73CD=B5"
1160 DATA "175DFE0B301532BF=B3"
1170 DATA "5CC9CD525D7E23B6=F8"
1180 DATA "234623B623B62003=3E"
1190 DATA "78B7C0CF0A3EC4CD=97"
1200 DATA "525DCDB8197AFEC0=85"
1210 DATA "D2DA1E06037E23B8=2C"
1220 DATA "C223EB10F87E23B7=30"
1230 DATA "C223EB7E2322C05C=AF"
1240 DATA "FE02C8CF02325A5D=82"
1250 DATA "2A4B5C7EFE00280B=80"
1260 DATA "FE80CA7006CDB819=5C"
1270 DATA "EB18F023C9CDFD5C=05"
1280 DATA "CD0A5DCD2A5DC9DD=2E"
1290 DATA "E5CD6A5D3E41FDE5=DA"
1300 DATA "FD215101CDC25CFD=58"
1310 DATA "E10100003ABE5C3D=73"
1320 DATA "573ABF5C3D5F2AC0=32"
1330 DATA "5CFDE5FD216301CD=8D"
1340 DATA "C25CFDE13035DDE1=1F"
1350 DATA "C9DDE5CD6A5D3E41=9E"
1360 DATA "FDE5FD215101CDC2=E1"
1370 DATA "5CFDE10100003ABE=33"
1380 DATA "5C3D573ABF5C3D5F=E1"
1390 DATA "2AC05CFDE5FD2166=AC"
1400 DATA "01CDC25CFDE13003=FD"
1410 DATA "DDE1C9CF12=68"
1999 DATA "END"
```

When all is well, use SAVE"SAVELOAD.BIN" CODE 60000 so that the code can be more quickly installed on later occasions.

The following +3Basic program uses the GET & PUT routines to analyse a disc directory and recover erased files.

```
 10 REM Program to examine file
 20 REM on a +3DOS disc.
 30 REM Ian Cull Bsc. 22/1/90.
 35 IF PEEK 23632*256+PEEK 23631=2412
    6 THEN GOTO 60
 40 LOAD "SAVELOAD.BIN"CODE
 50 RANDOMIZE USR 60000
 60 LET GET=23734: LET PUT=23737
 70 DIM D$(512): DIM S$(200)
 80 PRINT "Insert disc to be examined
    "
 90 POKE 23658,8: INPUT "File to exam
    ine";F$: POKE 23658,0
100 IF F$="" THEN STOP
110 LET F$=F$+".": LET G$=""
120 LET L=8: FOR X=1 TO LEN F$
130 IF F$(X)<>"." THEN LET G$=G$+F$(X
    ): NEXT X
140 IF LEN G$<1 THEN LET G$=G$+" ": G
    OTO 140
150 IF L=8 THEN LET L=11: NEXT X: GOT
    O 140
160 LET F$=G$: LET FND=0: LET DLT=0
170 REM
```

```
180 REM Search for filename
190 FOR X=1 TO 4
200 LET T=2: LET S=X: RANDOMIZE USR g
    et
210 FOR Y=1 TO 512 STEP 32
220 GOSUB 1000: IF G$=F$ THEN GOTO 30
    0
230 NEXT Y
240 NEXT X
250 IF FND=0 THEN PRINT "File ";F$;"
    not found": STOP
260 PRINT : PRINT "Total size =  ";FN
    D;" bytes"
270 IF DLT=0 THEN STOP
280 INPUT "Attempt recovery ";Y$
290 IF Y$="y" OR Y$="Y" THEN GOTO 500
295 STOP
300 REM Found file entry
310 LET USER=CODE d$(y): IF USER=229
    THEN LET USER=-1: PRINT : PRINT
    INVERSE 1; FLASH 1;"   File ";F$
    ;" deleted    ": IF DLT=0 THEN LE
    T DLT=1
320 IF USER>0 THEN PRINT "File ";F$;"
     in user ";USER
330 LET CMRK=CODE D$(Y+12)
335 IF CMRK=0 THEN PRINT : PRINT "Fou
    nd start of file ";F$
340 IF CMRK<>0 THEN PRINT : PRINT "Co
    ntinuation number ";CMRK
350 LET FLEN=CODE D$(Y+15)
360 PRINT "Length recorded = ";FLEN*1
    28;" bytes"
370 LET FND=FND+FLEN*128
380 FOR Z=Y+16 TO Y+31
390 LET BLK=CODE D$(Z)
400 IF BLK<100 THEN PRINT "0";
410 IF BLK<10 THEN PRINT "0";
420 PRINT BLK;" ";
425 IF DLT>0 THEN LET S$(DLT)=CHR$ BL
    K: LET DLT=DLT+1
430 LET FLEN=FLEN-8: IF FLEN>0 THEN N
    EXT Z
440 PRINT
450 GOTO 230
500 PRINT : PRINT "Please wait - bloc
    k checking": PRINT
510 FOR X=1 TO 4
520 LET T=2: LET S=X: RANDOMIZE USR G
    ET
530 FOR Y=1 TO 512 STEP 32
535 IF D$(Y)=CHR$ 229 THEN PRINT "-";
    : GOTO 580
540 PRINT "*";: FOR A=1 TO DLT-1
550 FOR Z=Y+16 TO Y+31
560 IF D$(Z)=S$(A) THEN PRINT : GOSUB
     1000: PRINT "Block ";CODE S$(A);
    " in use by file ";G$: STOP
570 NEXT Z: NEXT A
580 NEXT Y: NEXT X
590 PRINT : PRINT "Blocks not used by
     other files"
600 FOR X=1 TO 4
610 LET T=2: LET S=x: RANDOMIZE USR G
    ET: LET CHG=0
620 FOR Y=1 TO 512 STEP 32
630 IF D$(Y)<>CHR$ (229) THEN GOTO 65
    0
640 GOSUB 1000: IF G$=F$ THEN LET D$(
    Y)=CHR$ (0): LET CHG=CHG+1
650 NEXT Y
660 IF CHG<>0 THEN RANDOMIZE USR PUT
670 NEXT X
680 PRINT : PRINT "File recovery comp
    lete"
690 STOP
1000 REM Extract filename
1010 LET G$="": FOR Z=Y+1 TO Y+11
1020 IF D$(Z)>CHR$ (127) THEN LET G$=G
     $+CHR$ (CODE D$(Z)-128)
1030 IF D$(Z)<CHR$ 128 THEN LET G$=G$+
     D$(Z)
1040 NEXT Z
1050 RETURN
```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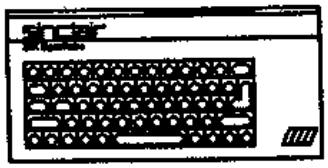

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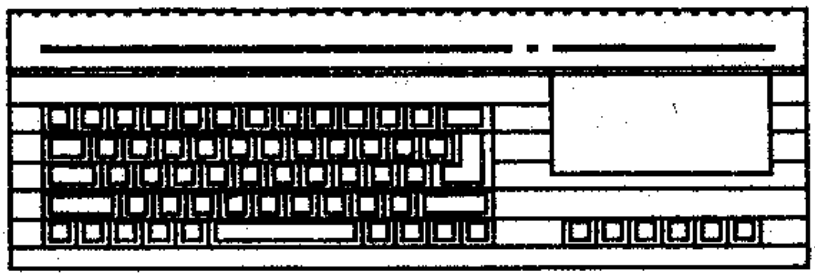

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nb. Latest dos required

BEYOND SIMPLE UDGs

Part 5.

By:- Clyde Bish.

You may remember some time ago I suggested using a series of short subroutines, called in succession to produce an illustration. Now's the time to follow up that idea.

As 3-D pictures seem to be in vogue at the moment let's set about producing the graphics for a dungeon/passage-type adventure. We will need views into rooms, along passages, around corners, into dead ends, through junctions etc. Although this may seem a little daunting at first it is in principle quite simple as all of these views can be made up a few, often repeated lines. Type in Program 1, keeping to the line numbers and I'll show you what I mean.

PROGRAM 1

```
20 PLOT 16,175: DRAW 48,-48: PLOT 0,
   0: DRAW 64,32: RETURN
21 PLOT 239,175: DRAW -48,-48: PLOT
   255,0: DRAW -64,32: RETURN
22 PLOT 15,175: DRAW 16,-16: DRAW 0,
   -143: DRAW -31,-16: RETURN
23 PLOT 240,175: DRAW -16,-16: DRAW
   0,-143: DRAW 31,-16: RETURN
24 PLOT 32,127: DRAW 191,0: PLOT 32,
   32: DRAW 191,0: RETURN
25 PLOT 223+(32 AND D=3),127: DRAW -
   159-(32 AND D=3),0: DRAW 0,-95: D
   RAW 159+(32 AND D=3),0: LET D=0:
   RETURN
26 PLOT 32-(32 AND D=3),127: DRAW 15
   9+(32 AND D=3),0: DRAW 0,-95: DRA
   W -159-(32 AND D=3),0: LET D=0: R
   ETURN
27 PLOT 223+(32 AND D=1),127: DRAW -
   32+(-32 AND D=1),0: DRAW 0,-95: D
   RAW 32+(32 AND D=1),0: LET D=0: R
   ETURN
28 PLOT 32-(32 AND D=1),127: DRAW 32
   +(32 AND D=1),0: DRAW 0,-95: DRAW
    -32-(32 AND D=1),0: LET D=0: RET
   URN
29 PLOT 65,126: DRAW 46,-46: PLOT 19
   0,126: DRAW -46,-46: PLOT 64,32:
   DRAW 46,23: PLOT 191,32: DRAW -46
   ,23: FOR N=16 TO 28 STEP 4: PLOT
   95+N,96-N: PLOT 160-N,96-N: PLOT
   N+95,N/2+48: PLOT 160-N,N/2+48: N
   EXT N: RETURN
30 PLOT 191,127: DRAW -127,0: DRAW 0
   ,-95: DRAW 127,0: DRAW 0,95: RETU
   RN
31 PLOT 0+(32 AND D=0)+(32 AND D=2),
   159: DRAW 255-(64 AND D=0)-(32 AN
   D D=2)-(32 AND D=3),0: PLOT 0+(32
    AND D=0)+(32 AND D=2),16: DRAW 2
   55-(64 AND D=0)-(32 AND D=2)-(32
   AND D=3),0: LET D=0: RETURN
```

All in? Good! Now try calling a few lines with the command GOSUB 20 (ENTER), or GOSUB 23 (ENTER). Not very impressive, you might think. All you get is a few lines drawn on the screen. True, but don't give up yet. These are just the picture elements. Now try this command:-

```
LET D=0: GOSUB 22: GOSUB 23: GOSUB 27:
 GOSUB 28: GOSUB 29 <ENTER>
```

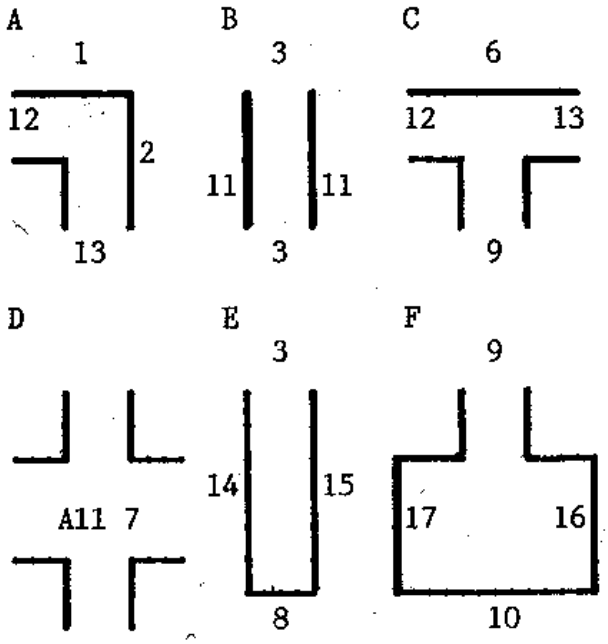
and you should have on screen a high walled passage going off into the distance, with two other passages leaving it at right angles. (Try it again first setting BORDER 6: PAPER 0: INK 7: CLS - It'll look more "Dungeony" in white on black paper).

Now you've seen how the picture elements are used add Program 2. This is a series of GOSUBs each of which calls the appropriate picture elements for any view within your maze. Try, for example, GOSUBs 1, 2, 13 and 12 in turn and you'll see the four views you would get standing at a right-angled bend in a passage. (Actually a little artistic licence is applied here, You've probably noticed that each time you turn you "step-back" to get a wider field of view. Crafty, huh!).

The GOSUB calls needed for each of

the four views for each passage element are shown in Fig.1 You can see the calls to lines 1, 2, 13, and 12 for the corner you've already seen, and that for a T-junction you would use 6, 13, 12 and 9. If you call 11 you'll note that the side walls of a section of straight passage (element B) are labelled "PASSAGE WALL" just in case you don't realise what those two lines are supposed to represent! (You'll also note that the calls for the cross roads element you called up manually at the beginning are all the same; GOSUB 7. No prizes for working out why!).

Fig.1



PROGRAM 2

```
 1 CLS : GOSUB 21: GOSUB 22: GOSUB 2
   6: RETURN: REM LEFT
 2 CLS : GOSUB 20: GOSUB 25: GOSUB 2
   3: RETURN: REM RIGHT
 3 CLS : GOSUB 20: GOSUB 21: GOSUB 2
   9: RETURN: REM FORWARD
 4 CLS : GOSUB 20: GOSUB 23: GOSUB 2
   7: GOSUB 29: RETURN: REM FORWARD/
   RIGHT
 5 CLS : GOSUB 21: GOSUB 22: GOSUB 2
   8: GOSUB 29: RETURN: REM FORWARD/
   LEFT
 6 CLS : GOSUB 22: GOSUB 23: GOSUB 2
   4: RETURN: REM RIGHT/LEFT
 7 CLS : GOSUB 22: GOSUB 23: GOSUB 2
   8: GOSUB 27: GOSUB 29: RETURN: RE
   M FORWARD/LEFT/RIGHT
 8 CLS : GOSUB 20: GOSUB 21: GOSUB 3
   0: RETURN: REM DEAD END
 9 CLS : LET D=1: GOSUB 27: LET D=1:
    GOSUB 28: GOSUB 29: RETURN: REM
   WALL/PASSAGE
10 CLS : LET D=0: GOSUB 22: GOSUB 23
   : GOSUB 31: RETURN: REM ROOM
11 CLS : LET D=1: GOSUB 31: PRINT AT
    4,10;"PASSAGE WALL": RETURN
12 CLS : LET D=1: GOSUB 21: GOSUB 28
   : GOSUB 29: RETURN: REM FORWARD+W
   ALL L
13 CLS : LET D=1: GOSUB 20: GOSUB 27
   : GOSUB 29: RETURN: REM FORWARD+W
   ALL R
14 CLS : LET D=2: GOSUB 22: GOSUB 31
   : RETURN: REM L WALL DE
15 CLS : LET D=3: GOSUB 23: GOSUB 31
   : RETURN: REM R WALL DE
16 CLS : LET D=3: GOSUB 21: GOSUB 26
   : RETURN: REM R WALL ROOM
17 CLS : LET D=3: GOSUB 20: GOSUB 25
   : RETURN: REM L WALL ROOM
```

O.K. Now we have the technology let's start to build up a simple maze adventure. First our intrepid traveller will need to be able to turn North, East, South and West to decide the next move. Program 3 is what you need, but before you add it to what you already have on board let's have a closer look at some of the lines. After all you need to know what you are doing and why if you're going to make your own mazes up later.

Line 99: This sets up some variables you'll need later. Note that 'W' is set to 9000. This is the player's command routine (and later the Dungeonmaster routine as well) and hence will be called very frequently so it's worth declaring a variable to save space. (Remember Part 1 of this series! No? You weren't a member of INDUG then. Tut tut! Better order some back numbers from Bob - and fast, before they run out!).

Line 800: This is a logic line which uses the value of O$ (the orientation of the player to determine which view subroutine is called. It works like this. Whichever value of O$ contained within thefour brackets is true the line number associated with that value is called. You may (and should) ask

what would happen if no values given match that in O$? The answer is - chaos! The remedy? Validate the player's response before allowing the program flow to reach a line containing such logic. The programming of such error checks I'll leave to you.

Line 9000: This prints the value of O$ to screen so you know which way you are facing.

Line 9010: A few interesting points here. The #0; AT 1,6 prints the prompt on the top line of the edit area of the screen, leaving the main screen display undisturbed. (The # sign is a channel selector, 0 being for the edit area. For future reference 1 is also edit area, 2 is main screen and 3 is printer). The display then holds whilst the player selects a key to press. The value of this is taken from the KSTATE System Variable at address 23556 and is stored in R$. Doing it this way instead of using INKEY# ensures that the value stored is that of the capital letter on that key, whatever shifts may or may not be pressed as well. This makes validation easier. (Not that there is any in progress. As I've said already, I'm leaving that to you). If R$ contains one of the cardinal points (which is all at the moment it can contain) the variable O$ is updated before a return is made.

Line 820: This simply loops the program round for the moment. Later we'll replace it.

Start up with RUN 90, then try pressing N, E, S, orW when you have these lines added and you'll be able to control the view you get.

PROGRAM 3

```
  99 LET D=0: LET C=14: LET O$="N": LE
     T W=9000
 800 GOSUB (2 AND O$="N")+(13 AND O$="
     E")+(12 AND O$="S")+(1 AND O$="W"
     )
 810 GOSUB W
 820 IF R$<>"M" THEN GOTO 800
9000 PRINT AT 3,16; INVERSE 1;O$
9010 PRINT £O;AT 1,6;"What Will you do
     ?": PAUSE 0: LET R$=CHR$ PEEK 235
     56: IF R$="N" OR R$="E" OR R$="S"
      OR R$="W" THEN LET O$=R$
9499 LET R=0: RETURN
```

Now we're getting somewhere - except that we're not! We're stuck peeping round the same boring corner! It's time we got on the move, so add program 4. You'll recognise the type of statements in lines 600-620, but 630 (and 830) are new. Again the machines logic capabilities can be used to enable you to move between one area of the maze and the next. Let's look at line 830 in detail. Assuming you've pressed M to move you will GOTO 810+ the value contained within the bracket of whichever statement is true. So if you're facing south 109 is added to 810 and control will shift to line 1000 (which at the moment is STOP so if you did you would have to restart with RUN 90 as before). If you pressed M whilst facing East then 210 would be subtracted from 810, shifting control to line 600 where you could look round as before. (Moving west of course would get you back from that forward/right junction). If you try to move north or west you'll find nothing will happen. There are no exits there. This is because none of the bracketed statements are true so 0 is added to 810 leaving you where you are.

PROGRAM 4

```
 100 GOTO 600
 200 STOP
 600 GOSUB (6 AND O$="N")+(13 AND O$="
     E")+(9 AND O$="S")+(12 AND O$="W"
     )
 610 GOSUB W
 620 IF R$<>"M" THEN GOTO 600
 630 IF R$="M" THEN GOTO 610+(90 AND O
     $="E")+(-410 AND O$="S")+(190 AND
      O$="W")
 700 STOP
 830 IF R$="M" THEN GOTO 810+(-210 AND
      O$="E")+(190 AND O$="S")
1000 STOP
```

Amuse yourself for a while before adding in the lines of Program 5. This is the rest of the maze shown in Fig 2. Each element is numbered and the

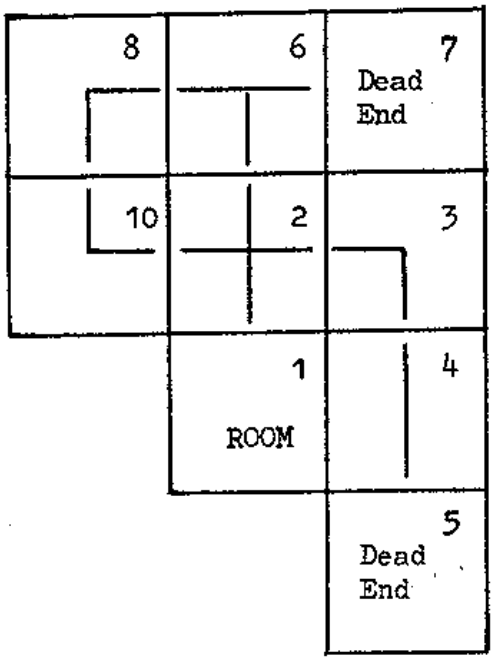
corresponding line numbers can be found by adding two zeros to the element number, i.e. up to now you have been stuck in areas 6 and 8, hence the 600's and 800's lines.

PROGRAM 5

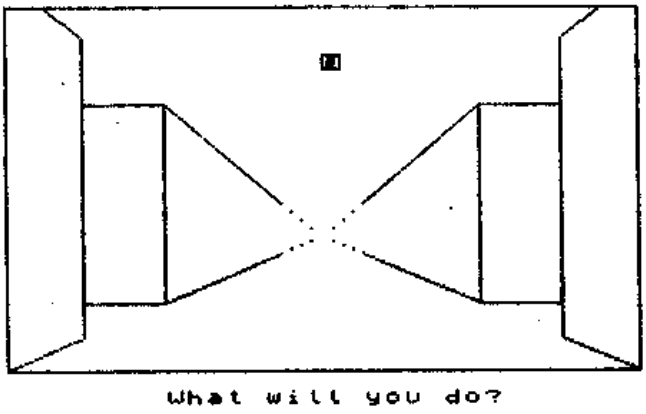
```
100 GOSUB (9 AND O$="N")+(16 AND O$="
    E")+(10 AND O$="S")+(17 AND O$="W
    ")
110 LET L=1: GOSUB W
120 IF R$<>"M" THEN GOTO 100
130 IF R$="M" THEN GOTO 110+(80 AND O
    $="N")
200 GOSUB 7
210 LET L=2: GOSUB W
220 IF R$<>"M" THEN GOTO 200
230 IF R$="M" THEN GOTO 210+(380 AND
    O$="N")+(80 AND O$="E")+(-110 AND
     O$="S")+(790 AND O$="W")
300 GOSUB (1 AND O$="N")+(2 AND O$="E
    ")+(13 AND O$="S")+(12 AND O$="W"
    )
310 LET L=3: GOSUB W
320 IF R$<>"M" THEN GOTO 300
330 IF R$="M" THEN GOTO 310+(-110 AND
     O$="W")+(90 AND O$="S")
400 GOSUB (3 AND O$="N")+(11 AND O$="
    E")+(3 AND O$="S")+(11 AND O$="W"
    )
410 LET L=4: GOSUB W
420 IF R$<>"M" THEN GOTO 400
430 IF R$="M" THEN GOTO 410+(-110 AND
     O$="N")+(80 AND O$="S")
500 GOSUB (3 AND O$="N")+(15 AND O$="
    E")+(8 AND O$="S")+(14 AND O$="W"
    )
510 LET L=5: GOSUB W
520 IF R$<>"M" THEN GOTO 500
530 IF R$="M" THEN GOTO 510-(110 AND
    O$="N")
610 LET L=6: GOSUB W
700 GOSUB (15 AND O$="N")+(8 AND O$="
    E")+(14 AND O$="S")+(3 AND O$="W"
    )
710 LET L=7: GOSUB W
720 IF R$<>"M" THEN GOTO 700
730 IF R$="M" THEN GOTO 710+(-110 AND
     O$="W")
810 LET L=8: GOSUB W
1000 GOSUB (13 AND O$="N")+(12 AND O$=
    "E")+(1 AND O$="S")+(2 AND O$="W"
    )
1010 LET L=10: GOSUB W
1020 IF R$<>"M" THEN GOTO 1000
1030 IF R$="M" THEN GOTO 1010+(-810 AN
    D O$="E")+(-210 AND O$="N")
```

Now you can explore to your heart's content. Use Fig 2 as a guide and try to find all the element shown, checking each of the views in turn. (Don't forget you can go both clockwise and anticlockwise around the loop formed by areas 2, 6, 8, 10!). If you do this in conjunction with Program 5 listing you'll notice how in each case the line ending with 30 moves control.

Fig.2



No doubt in your wanderings you've discovered - nothing. No doors to open. No secret passages to explore. No holes to crawl through. Just bare walls. That I will help you to remedy next time. In the mean time, don't get lost.



TEACHERS PET

By:- Keith Pirie.

WRITE YOUR OWN? SELL YOUR OWN.

My introduction to the use of computers came when my eldest son arrived home from school and declared that he had had his first taste of computing and "it was ace." My seven year old then went into raptures about LOADing and ENTERing. There I was a dinosaur at 30.

I took a couple of books out of the library and experimented (on paper...I hadn't bought a computer, and had no access to one) with writing short BASIC programs. Eventually I reached the stage where I just had to try out my scribblings to see if they would actually work on a computer.

A new ZX81 was bought and I was both pleased, and surprised that I seemed to have grasped the basics of this programing thing....most of my scribblings worked (well, with a little coaxing). 1K was good fun but frustrating and a 16K wobble RAM pack was bought. 16K was brilliant but the wobble crashes were annoying (mild understatement!). A 48K Spectrum answered all my problems.

Typing other peoples printed listings into the machine was sometimes long and laborious but it was great to learn new techniques and commands. At that time computer magazines were really for the new programmer, not many had dabbled in machine code, and the dreaded games reviews hadn't taken over. Indeed magazines such as Sinclair Programs had nothing but listings for typing in.

It was now time to experiment on my own. I wrote one or two short programs and submitted them to magazines for publishing. The rejection slips were always in the nicest possible taste!!

At this time, my eldest son was doing a school project on fish. I wrote a couple of short and simple programs for him to use at home. The programs soon ended up with the class teacher and were used as part of the project. A note from school declared that the next terms project was to be outer space "any chance of a program or two on that subject?".

At least now, someone was using the programs that I was spending hours over, conceiving, writing, debugging, debugging, debugging, debugging....

I am not a school teacher, but, at that time, my brother was. He was using Spectrums in his school and immediately copied all my programs and placed his request for programs on his particular subjects. The list of software was now growing. About this time I got a couple of 'phone calls from teachers enquiring about whether my programs were widely available. I was happy to supply them on cassettes that were sent to me with stamped addressed envelopes.

In May 1987, at the suggestion of a local Headmistress, and the nagging of my wife!, I photocopied an introductory letter and made up an Order Form containing details of my 12 programs on offer, and sent copies of both to all Head Teachers in Aberdeen. TEACHERS PET SOFTWARE was born.

It cost a few bob for photocopying, envelopes and stamps but, nothing ventured, nothing gained. The response quite amazed me. It seemed that there was a shortage of cheap educational software.

All the programs in the TEACHERS PET SOFTWARE range were (and still are) written in BASIC and unprotected. This

allows teachers or parents, with a little programming knowledge, to go into the programs and tailor them to their individual requirements.

The first order form offered the programs at £3.50 each but a bundle of 5 could be had for £15. Within a fortnight I had recouped my outlay and was beginning to show a slight profit.

Nothing can describe the satisfaction of knowing that people actually use the programs that you have spent hours over. The money, honestly, was co-incidental.

The profit didn't last for long! I got more photocopying done and circulated all schools in the Region. (Our Region is one of the few that had a policy of purchashing the good old Spectrum for use in all its Primary schools.)

Once again, the response was very encouraging. TEACHERS PET was off and running.

At this point I contacted the local Inland Revenue Office and declared the business. All that they required was an annual submission of trading accounts. The keeping of accounts was the area that scared me about this venture but, it is dead easy really. I send a record of the total money taken in along with a record of how it was spent and what is left, no need for a professional accountant. (to date, I have submitted two sets of accounts and the tax man agrees I am non-profit making, should I be relieved or concerned? Maybe there is a need for a professional accountant after all!!)

I wrote a few more programs, and about this time, bought a copy of THE ARTIST II with Pagemaker. I used Pagemaker to compile a Newsletter advertising the programs.

Today, almost three years on, I circulate all the schools in my Region and all my other customers (a feature in CRASH on educational programs, reviewed a number of my programs and brought enquiries from all over Britain) with a quarterly Newsletter and updated Order Form.

The Newsletter and Order Form are now compiled with the help of the very excellent P.C.G. (Cardex when I bought it) DTP suite of programs and printed by a local printer. The Order Form now offers some 55 programs.

In my time in business I have managed to keep costs down, currently £4.50 each or a 5 pack for £20, despite the rising costs of cassettes and postage.

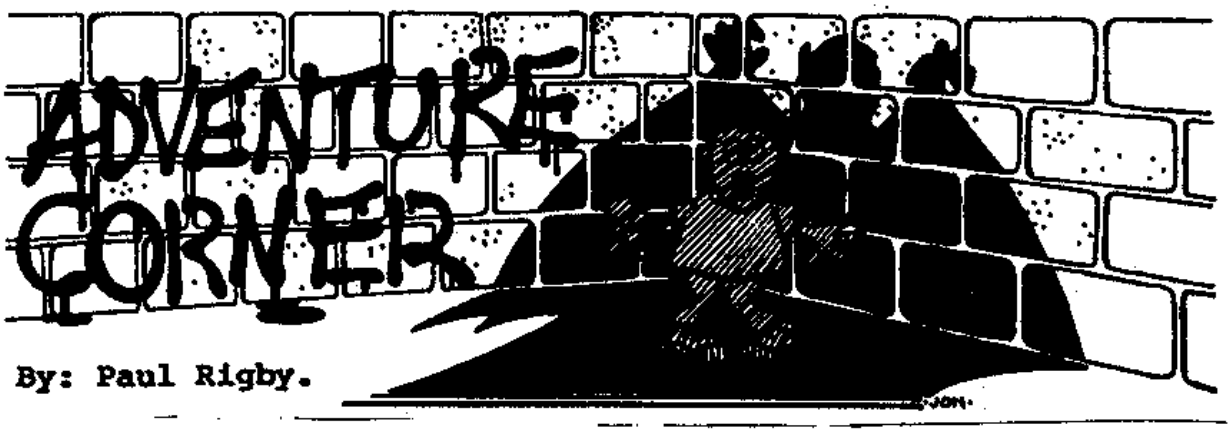
At that price there is not a fortune to be made (the object is not to make a loss really!) but, the profits do finance my hobby. I don't have to think long and hard before buying some piece of kit for the computer corner and whether or not, it deprives the family of some of the housekeeping. More than anything else, the satisfaction of having created programs that are being used in so many schools and homes is hard to explain. It may be very egotistical but I like it anyway!!

If you're a home programmer and have an idea that your programs are good enough to share with the rest of the computing world, whether it be in education, utilities or games why not go for the home grown "Cottage Industry" and sell your work yourself.

The best word of advice I can give is not to be greedy, and know your limitations. Look at your product and compare it with what is already available. No-one will pay £9.99 for a basic version of "Chase HQ"!! no matter how great your graphics are. Give your customers value-for-money and they will come back for more.

I still get a buzz when the postman drops a letter through the letter box addressed to TEACHERS PET SOFTWARE. Last week we even had one addressed to the "ACCOUNTS DEPARTMENT".

TEACHERS PET SOFTWARE,
175, Craigton Road,
ABERDEEN.



By: Paul Rigby.

By now, you have probably heard that Level 9 have decided to stop creating standard text/graphic adventures in favour of a new system they call H.U.G.E. (wHolly Universal Graphic System). Mike Austin, Level 9's Managing Director, commented that, "HUGE is a good name for the new system as it includes 165,000 lines of code and has taken 10 man years to develop. It represents a number of major advances for games software, and we are confident that the acclaim that Level 9 have received in the past for our high quality adventures will be continued in the more arcade-orientated environment of HUGE."

The new system looks like a cross between a release from Sierra (Leisure Suit Larry, etc) and Cinemaware (Defender of the Crown, etc). A dramatic change, indeed, for a company whose very existence has always depended upon text/graphic adventures. So why, after all this time adopt a new system? Well, Level 9 say that text/graphic adventures don't sell any more, at least their new adventures are not gaining the sales they require. According to Pete Austin, Level 9 game designer, "There have been so many good adventures written over the past few years that producing new ones which will sell in any quantity is getting more and more difficult," he then added that, "people have been declaring the death of the adventure market for years..."

I must admit, my blood boiled for a few minutes and large quantities of steam blew out of my ears when I heard that. Is the Adventure market dead? Are Pete's words true or is he talking through his hat? Is this an excuse or an attempt to justify a dramatic turn-around by Level 9? Consider a few facts. If you look at other areas of the gaming market, the shoot'em-up for example, you will see, what appears to be, hundreds of titles. They swamp the market and cater for every computer.

Shoot'em-ups have been around for years and yet they still prosper. The fact is, that although they abide by the same design rules and characteristics their graphics, sound, features and overall gameplay are constantly improved. They have maintained steady progress, keeping up with the market's hunger for "bigger and better".@

The same ideas can be applied to any piece of software, no- matter how crowded the market. Whether it be wordprocessors, art programs or adventures. So Pete's statement about it being tough to sell adventures in quantity is a load of rubbish. If the adventure is good enough it will sell. No-matter how many other "good" adventures have sold previously. I'll give you two contrasting examples.

Before The Pawn's arrival there were many good adventures on the market. However, The Pawn introduced something new, something fresh. Okay, it isn't perfect, but the important factor is it brought the adventure market back to life. Even people who had never touched an adventure before were attracted to it. The second example, probably more extraordinary, was the success of Rigels Revenge. Here we had a cheapo budget adventure, the type of "low-grade" software which you normally play once and throw in the bin (are you reading C.Sharp?), leaping into the upper reaches of the software charts. There was some hard work put into that game. Someone sat

down and not only thought up the usual plot but spared some consideration for design. Again, not a perfect game, but one which drew much deserved praise.

In my opinion Level 9's text/graphic adventures have not kept pace with their rivals and are now paying the price with a lack of sales. Improvements have been slow to arrive. Level 9 have been guilty of complacency. A fact highlighted by the shock arrival of Magnetic Scrolls who, rapidly, became the top UK adventure software house. Level 9 tried to emulate Mag.Scroll's graphics and ended up with washed-out watercolours which did not flatter the game at all. Then they introduced the concept of wandering characters, character manipulation, etc. This system was never totally workable. What with the overcrowding of characters in Knight Orc and the many bugs and odd situations in Lancelot and Gnome Ranger I always felt that the later Level 9 adventures had an unfinished air about them. Their final adventure is Scapeghost. More of the same. A good adventure, yes, but nothing to set alight the hearts of non-adventurers. Whose patronage often turns a good game into a money-spinner. But then, Level 9 must have been hard at work on HUGE throughout Scapeghost's development so why should they try to be innovative with it? Why bother?

I don't agree with Pete Austin's views. Adventures are not dead - or even dying. We have the home grown adventure authors for a start, who have maintained a steady output and an increase in production quality which belies the enforced lack of funding available to them. But as far as the commercial software houses go I feel that we are going through a period of change. Magnetic Scrolls have not given up the text/graphic adventure (according to Anita Sinclair). They have been working on a new adventure system for some time. Hopefully we will see the results in the next couple of months. Infocom have recently shown some interesting innovations with the likes of Mark Blanc's Journey. (I was recently talking to Infocom's boss, Rob Sear. He mentioned that he was going to be making announcements about new releases during Jan 1990). Then there is Hound of the Shadow, Eldritch's new game (via Electronic Arts). Having had some time with an early copy it is, to my mind, the first game to successfully blend role-playing elements with a text/graphic adventure. Hound introduces the exciting Timeline system, allowing you to save your character from one gameworld and insert it into another. Think of it as an adventure with a variety of scenarios. Each "scenario" can be tackled in any order.

I think that half the trouble is that people see the text adventure as a means unto itself, likewise with the text/graphic adventure. So when anyone sees a game which deviates from this style they immediately shout that "The adventure is dead!". Which is ridiculous. If you stop to think you will see that adventures have been going through an evolutionary process. Be it via new adventure creation systems, more powerful computers or whatever. The text/graphic adventure is alive and well but growing up, maturing into more a complex form of entertainment. For the stalwarts amongst you who view all such change as sacrilege, there will always be "classic" adventures. I am sure of that. The numbers may decrease but they will always be there - even if it is solely from the home produced sector.

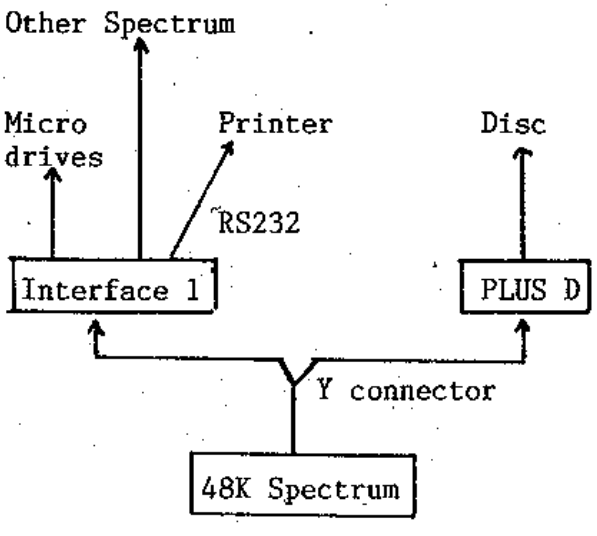
It is heartening to hear from Eldritch's Chris Elliot and Richard Edwards who told me that just having a game with graphics cannot convey the right atmosphere. Even pictures of horrific happenings become staid after a while. It is only through text that you can create the correct atmosphere, one that will be perfect for everyone as each person creates their own. As Hound of the Shadow is a horror story, Chris and Richard believe that only through your own imagination can you create the correct amount of suspense and fear. Text is the perfect vehicle.

NEV'S HELP PAGE

By: Nev Young.

T.Shroder of West Germany has plans for an ambitious setup on his 48K Spectrum. (See diagram). With this he wants to transfer files from Microdrive to disc and also the other way. The only problem you have is the Y connector. This will not work as the PLUS D and the Interface 1 both use the same port addresses and both page in their shadow ROMs at the same time. You will need a device like the MGT twoface. Unfortunately this is no longer produced so you will have to try and get one secondhand or build one yourself. To be able to use both PLUS D and the Interface 1 at the same time you will need some form of programmatic control over this device (The twoface does not have this ability) so that you can switch from PLUS D to interface 1 from within your copy program. I feel that a much better method is to try and get hold of a DISCiPLE which I know can be used with the Interface 1 plugged into the through connector, and by use of the inhibit button can be turned on and off as required. But this still has the problem that you will have to write your own copy program. However, with a DISCiPLE you could copy most software over the network.

Diagram



Perhaps one of our hardware orientated readers would like to come up with a suitable Y connector as a project?

Now that I have mentioned networks T.O'Brien of London is having terrible problems with his network of 7 Spectrums at his school (I assume you are a teacher rather than a pupil). Everything worked fine until some bright spark decided to have the room re-wired. Now the machines are very reluctant to work. I can only offer some fairly general advice as I don't know your particular setup and you may well have done all this already.

First Do not pay too much attention to the earthing of the mains supply as all of the Spectrums are isolated from the earth line, or at least they should be, by the power supply. Next keep the network cable as far away from the mains and other sources of interference, such as the TV, as possible. Clean all the Spectrum edge connectors and the network plugs and sockets. Check the network cables for good continuity on both the signal and screen. Check the network sockets are making a good tight connection with the plugs. If none of that helps go down the pub and get drunk. (That won't help either but its more fun). Sadly this is a prime example of one of the first laws of computers:- If it works don't bugger about with it.

Now for something completely different. N.V.French of Spalding always gets a SECTOR ERROR report whenever he tries to use the LOAD@ or SAVE@ commands. So to recap the command is:-

LOAD @ disc, track, sector, address

Where disc is 1 or 2, track is 0-79 or 128-208 (assuming 80 track drives) sector is 1-10 and address is where

ever you want to put the data in memory.

For example LOAD @ 1,0,1,16384 will put some dots and lines at the top of your screen. If you are sure the numbers are within the range shown and you still get errors then you have either a faulty PLUS D, faulty disc, or faulty drive. A word of caution the SAVE @ command can seriously damage the data on your discs. DO NOT USE IT on a good disc unless you are sure you know what you are doing.

A Letter from Rob Helsford of Manchester asks how do you use the RS232 port of a 128K machine as stated in the TASCOLOUR article in vol 3.2. First if you have a DISCiPLE of PLUS D you must specify that the centronics printer port is not to be used by POKE @11,1 then save your system file, switch of the machine and then turn it back on and re-boot. This stops the PLUS D from overwriting the printer channel vectors. Next a red herring The Tasword manual tells you how to configure for an RS232 printer but it gives the commands for Interface 1 NOT for a 128K machine. The correct command is not 279 FORMAT "b";x:OPEN #3;"b" but 279 FORMAT "p";x: OPEN #3;"p" . Where x is the printer baud rate. At least that works for me. I'm using the version of TW 2 that came free with Interface 1, but I believe it's the same one.

G.Boustard of Haslemere Surrey asks a few questions about the PLUS D which I will answer in order of increasing difficulty.

Q. Can I get details of how the PLUS D ROM works?
A. Some of it can be found in issues 2.8, 2.9, 2.10 and 2.12

Q. Which issues of FORMAT dealt with loading basic files, snapshots and code files?
A. Issues 1, 2.4, 2.6 and 3.2.

Q. What is the address of the routine that boots the PLUS D when it is switched on?
A. 037BH (Short answer but I had to look for it).

Now a question for you. Now you have the answer to the final question. What are you going to do with it?

Finally this month a letter from K.Bainbridge of Darlington. He is trying to get Masterfile MF-PRINT to work via his PLUS D. Thank you K, you have sent the type of info that I really need to try and fix a problem. He has sent copies of the relevant pages of the manual and a printout of the program. I get requests for specific programs every month and can do nothing to help as I do not have that program and know nothing about it. That is also the case with MF-PRINT but because you have sent me such detail I feel fairly confident that the answer to your problem is to change lines 4210 & 4290 to read:-

```
4210 POKE @ 6,1: GOTO USR R
4290 GOTO USR R
```

I believe this to be right as the PLUS D does not need any printer initialization other than that done by the PLUS D itself. Also you do not need to CLOSE #3 at the end of a print but if you have problems with the last line not printing try 4290 LPRINT : GOTO USR R. This should complete the last line if not already done.

Well thats all for this month. Keep those letters coming. I will answer as many queries as possible but only through the magazine. Also it is in your interest to send me as much info as possible such as program listings etc. as contrary to popular belief I do not have a vast library of programs, I only do this in my spare time! Write to FORMAT or direct to me at:-

FORMAT Help Line,
3, Mitchell Place, Falkirk,
Stirlingshire, Scotland, FK1 5PJ.

Overseas readers please note, Scotland is NOT in England, it's in Great Britain. My postman gets quite upset about that.

SPECTRUM DTP

By:- Carol Brooksbank.

If you asked me whether desk top publishing on the Spectrum is a viable proposition, the answer would be yes, but rather a guarded yes. Guarded because, if you have written a three hundred page book, lavishly illustrated with diagrams, on some subject so obscure that no publisher will touch it, and you fancy the idea of putting it out yourself using your trusty Spectrum, my advice is - forget it. You would be in your bath chair before you managed to print a hundred copies.

But if you want to publish a short pamphlet or company report, with a fairly limited circulation, your Spectrum can give you a very professional, and cost-effective, result.

There are two main DTP packages for the Spectrum. One is THE ARTIST II/THE WRITER from Softek, and the other, SPECTRUM DTP PACK from P.C.G., (formerly Cardex). Both are available in 128K and 48K versions.

I have used THE ARTIST II for DTP for a long time, and I am very fond of it. The text to be used on a page must be prepared using THE WRITER, and the text is the 'skeleton' around which the page is built. Spaces are left as you write, where the illustrations are to be placed. Graphic codes are inserted for underlining, and to select the type fonts in which it will eventually be printed.

The text is then saved, and loaded into THE ARTIST II's 'Pagemaker'. In the 48K version, this is a separate program, and text and ready-prepared illustrations can be brought together, but cannot be modified. The page is prepared in four separate blocks, and it is not possible to preview the whole page before printing.

In the 128K version, the text preparation is the same, but the Pagemaker is an option of the main program. It is, in effect, a ramdisc which can hold 8 screens in memory together, allowing you to scroll freely round them. The text is loaded in, and illustrations are added by 'grabbing' an area from the page into the main program and then either drawing artwork directly into it, or inserting a previously prepared illustration before returning the modified section to the page in memory.

Both text and illustrations can be modified using the main program's facilities. It is much more flexible than the 48K version. If you find a typing error in the text in the 48K version, you have to return to THE WRITER to correct it. In 128K, the art program text mode can be used. And there is a page preview option which, although you can't read the text, allows you to see the layout of text and illustration blocks.

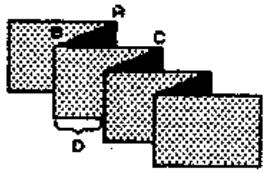
The page is saved to the storage medium in four blocks, just as in the 48K version, and the blocks are printed one after the other to produce the complete page.

The printout is in practice one huge screen dump, two screens across and four down, though the bytes are taken from a memory storage block, not from the display file. The result is that what you see is what you get. This has some obvious advantages, but it also means that the result looks like a screen dump, not like a printed page. And if your ribbon is getting a bit feeble, it will be a rather pale printout. You cannot switch to double strike mode.

Nevertheless, I had produced one or

PLEATS

Pleated fabric can be produced on any standard knitting machine with a ribber. A fine industrial yarn produces the best results, as full needle rib is used, and a heavy yarn gives too stiff and thick a fabric. One strand of 2/30 acrylic yarn produces a medium weight fabric which pleats well.



The diagram above shows the structure of pleated fabric. The area bracketed at D is the visible part of the pleat. A-B is the underfold, and B-C is equal to the visible part of the pleat + the underfold. The width of fabric required to make 1 pleat is A-B-C, and is equal to the visible part + twice the underfold.

The fabric is produced on the knitting machine using full needle rib, but wherever a fold line is required, a needle is left out of work on one or other of the beds, depending which way the material is to fold. The out of work needle produces a permanent fold line, so the pleating produced needs no pressing.

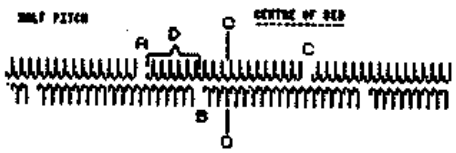
In these notes, the underfold and the visible part are assumed to be equal, which produces full knife pleating, so the full pleat is three times the width of the visible part. For a less full pleating, the underfold can be half, or less if required, the width of the visible part.

Before knitted pleating can be produced, it is necessary to calculate the number of stitches in one full pleat. Decide first how many stitches wide the visible part is to be. Choose an even number, as this makes later calculations easier. A visible pleat 6 stitches wide is used in the examples in these notes, but a wider pleat could be used. It is not advisable to use a narrower one than 6 stitches.

Using 6 stitches for the visible part, and an underfold of the same width, there will be 18 stitches in one full pleat. (Visible part = 6 + 2 x underfold, also 6, = 18).

Bring the ribber to working position, and select half pitch.

For the moment, select needles only on the main bed. Bring the needles for one full pleat to UP, half on each side of centre line. With a full pleat of 18 needles, this means 9 on each side of centre line. (Needles between A and C on diagram below.)



Leaving a needle on each side of this block in NUP, continue towards each end of the main bed, bringing forward blocks of needles for 1 pleat, (18 in this example), separated by a needle in NUP. There will probably be too few needles at each end for a complete block, but leave the end bed arrangement until the ribber needles are set.

-1-

Fig 1.

two short pamphlets using Pagemaker, and had been well satisfied with the result, until I met P.C.G.'s SPECTRUM DTP PACK. Now I have to admit that there is no comparison. You can see the difference for yourself. Fig. 1 is the Pagemaker, and Fig. 2 the DTP printout of the same page. DTP has proportional spacing, professional looking fonts and a degree of blackness which makes the final page look printed. It is rather heavy on ribbons because it employs a three-pass printing operation, but even when your ribbon is getting tired, the result is still wholly acceptable. In fact, I found the printing a bit heavy with a brand new ribbon and prefer the output of a slightly worn one.

The package consists of three programs, all of which can also be bought separately, WORDMASTER - a word processor, HEADLINER - a graphics package, and TYPELINER - a page layout designer.

WORDMASTER is a stand-alone word processor, which can be used like any other word processor, except that it can incorporate graphics into the text. But this is not DTP. The printing is the ordinary output of your dot matrix printer - the fonts being the ones your printer produces - but it can also handle screen dumps in the middle of text. The result looks like any other word-processed document, with the addition of simple illustrations if required.

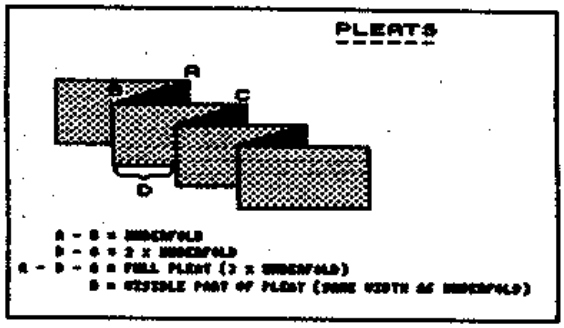
It is not a very sophisticated word processor, but it can handle search-and-replace, block manipulation, headers and footers, page numbering, justified or right- left- or centre-aligned text, and draft or NLQ printouts (if your printer has NLQ.) There are a few graphics for font selection etc., but usually simple commands like 'elite' or 'pica' are entered into the text file as required. The on-screen text is not justified, but a 'fill' command gives a justified printout.

ASCII files can be loaded from other word processors, but if they were justified they should be loaded into the original program and reformed as 'ragged right' and saved again before loading into WORDMASTER. And if, like THE WRITER, each line is terminated by a line feed, you have to go through the text after loading it into WORDMASTER and remove all but the end of paragraph line feeds, because this program relies on words being separated by one space each, with line feeds used only as end of paragraph markers. There is a menu option for stripping out non-ASCII characters, like TASWORD or THE WRITER printer control codes, which are not used by WORDMASTER.

I like WORDMASTER as a word processor. It is simple and easy to use and requires no knowledge of printer codes and so on. HEADLINER and TYPELINER are extension programs, which cannot be used unless WORDMASTER is present. HEADLINER is a simple graphics package which is really intended for adding headlines to your DTP page, and comes equipped with six large fonts. It can also be used as a conventional graphics package, but it lacks some of the more sophisticated options found in other programs, like window manipulation, cut and paste, etc. But the package can also load screens produced in any way, so if you produce illustrations using, say, ART STUDIO or THE ARTIST II, you can still use them with the DTP PACK.

PLEATS

Pleated fabric can be produced on any standard knitting machine with a ribber. A fine industrial yarn produces the best results, as full needle rib is used, and a heavy yarn gives too stiff and thick a fabric. One strand of 2/30 acrylic yarn produces a medium weight fabric which pleats well.



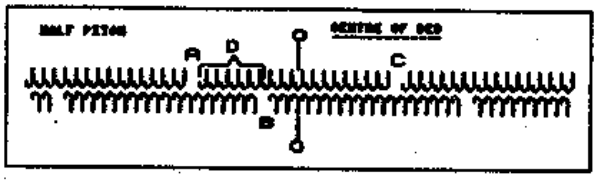
The diagram above shows the structure of pleated fabric. The area bracketed at D is the visible part of the pleat. A-B is the underfold, and B-C is equal to the visible part of the pleat + the underfold. The width of fabric required to make 1 pleat is A-B-C, and is equal to the visible part + twice the underfold. The fabric is produced on the knitting machine using full needle rib, but wherever a fold line is required, a needle is left out of work on one or other of the beds, depending on which way the material is to fold. The out of work needle produces a permanent fold line, so the pleating produced needs no pressing.

In these notes, the underfold and the visible part are assumed to be equal, which produces full knife pleating, so the full pleat is three times the width of the visible part. For a less full pleating, the underfold can be half, or less if required, the width of the visible part.

Before knitted pleating can be produced, it is necessary to calculate the number of stitches in one full pleat. Decide first how many stitches wide the visible part is to be. Choose an even number, as this makes later calculations easier. A visible pleat 6 stitches wide is used in the examples in these notes, but a wider pleat could be used. It is not advisable to use a narrower one than 6 stitches.

Using 6 stitches for the visible part, and an underfold of the same width, there will be 18 stitches in one full pleat. (Visible part = 6 + 2 x underfold, also 6, = 18).

Bring the ribber to working position, and select half pitch. For the moment, select needles only on the main bed. Bring the needles for one full pleat to WP, half on each side of centre line. With a full pleat of 18 needles, this means 9 on each side of centre line. (Needles between A and C on diagram below.)



- 1 -

Fig 2.

TYPELINER is the page layout designer. Before you can plan a page, you must load into memory all the text files, type fonts and graphics blocks which are to be used in it. The text files must be WORDMASTER files, and if the 'fill' command has been inserted into a file, it will be right-justified, whatever font or layout is used.

The minimum page components are one text block and a 'box'. The box can actually be a box, surrounding an illustration for instance, or a

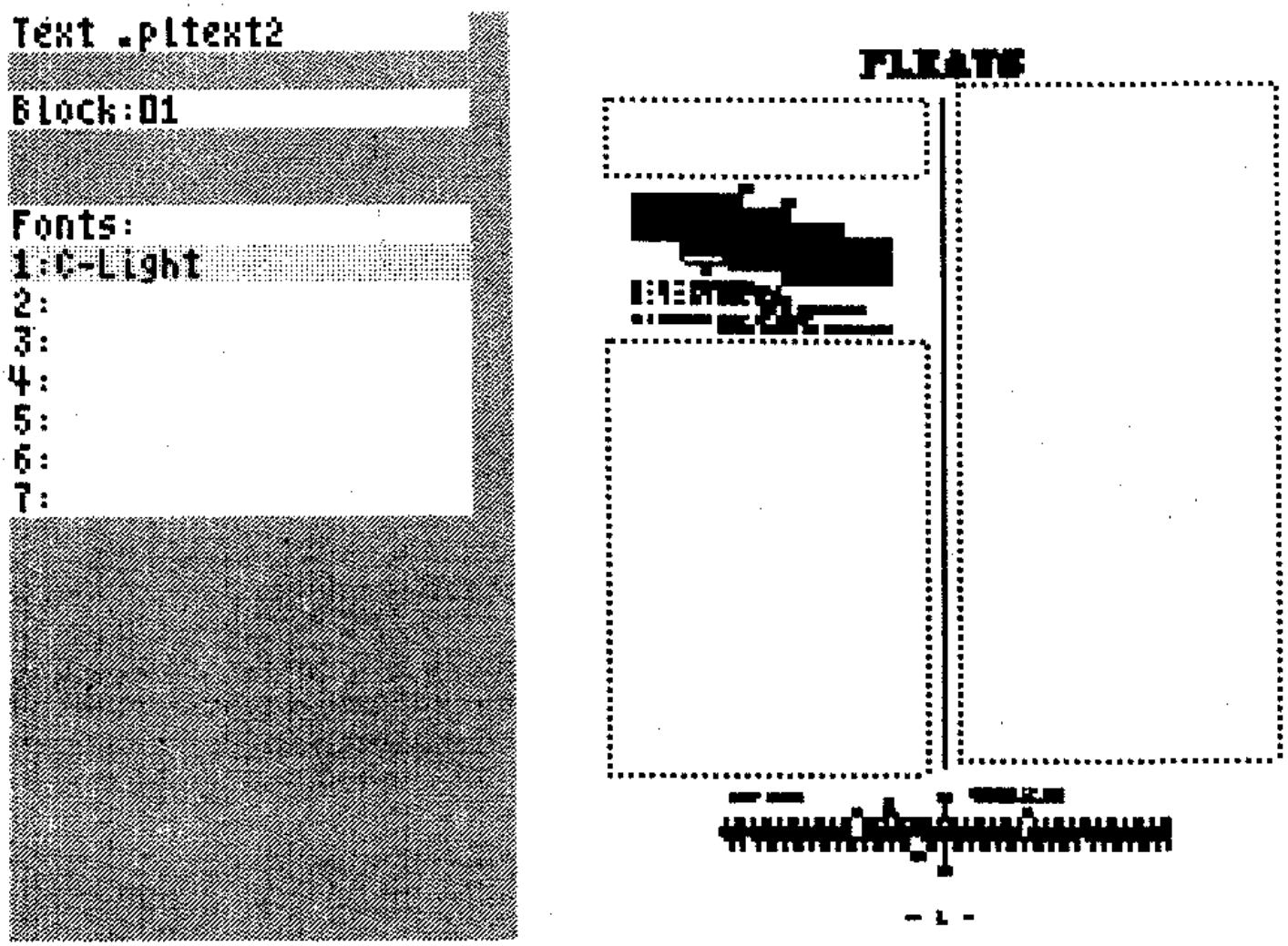


Fig 3.

vertical or horizontal line. But you can't get rid of it altogether. If you are using a two-column page, you can make it a vertical line between columns, or I found myself using it to outline illustrations when I didn't particularly want to do that. But on an all text page it was a real pain, because I had no use for lines or boxes of any sort. In the end, I reduced it to the smallest vertical line possible (about 3mm in a printout), moved it to the very left of the page, and stuck a staple over it when binding the pamphlet! On an all-graphics page you must have a text block, but it can be rendered invisible by using an empty text file.

You design your page by arranging text blocks, graphics blocks and boxes on the design screen. (Fig. 3). You specify the text file and default font to be used, and for each graphic block, the name of the graphic file. If a text file flows into more than one block, the blocks will be filled in the order in which you created them, and special codes entered into the text can specify fonts when you wish to use more than one. A form feed command in the text will force it to quit the current block and continue in the next. You can switch freely between TYPELINER and WORDMASTER if you need to modify the text.

Graphics, which can be whole or part screens, can be rescaled, up or down, 1x or 2x for height, and 1x, 2x or 4x for width.

There is a screen preview of the page, and although the text cannot be read, the position of graphics and text can be seen, and the first lines of text in each block are displayed alongside the design screen as you

switch from block to block, so that you can keep track of the text layout.

Finally, you can make a draft printout for detailed checking before printing the finished page. The draft is a one-pass printout, which is less hard on your ribbon, but is not sufficiently readable to be useful for anything but layout checking.

The page layout can be stored in memory, and all the files of text, graphics, fonts etc. saved to your storage medium as one file. Storage is much more economical than with THE ARTIST II's Pagemaker. Every Pagemaker page needs 56K of storage space, but I saved two pages and a cover as one file in 22K with DTP PACK. I use the 48K version with the +2. The 128K version is only available for the +3 or the +2A, and the only difference is that a greater number of files can be held in memory at once. Probably I could keep a whole pamphlet as one file instead of in 2 or 3 files of a couple of pages each with 48K.

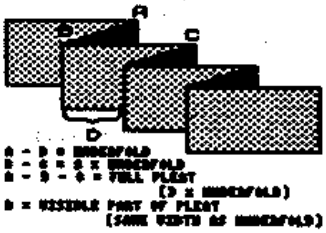
The quality of the DTP PACK page is astonishing. The fonts are professional looking (there are more fonts available as extras if you want them), and the proportionally spaced text is attractive and easy to read. You can work in two or three columns if you wish. (Fig. 4)

But it has to be said that it is not an easy program to learn to use. It needs a fair bit of study to master the various facilities, though there are demo files included to help you to get to grips with it. Once mastered, though, it becomes very straightforward.

As a bonus with DTP PACK, there is a simple graph program. You feed in the data for up to 20 fields, and the program produces a vertical or horizontal graph or a pie chart. There are facilities for adding text and shading, and the result can be saved as a screen. (Fig. 5)

PLEATS

Pleated fabric can be produced on any standard knitting machine with a ribber. A fine industrial yarn produces the best results, as full needle rib is used, and a heavy yarn gives too stiff and thick a fabric. One strand of 2/30 acrylic yarn produces a medium weight fabric which pleats well.



A - B = UNDERFOLD
B - C = 2 x UNDERFOLD
A - D = FULL PLEAT
(3 x UNDERFOLD)
B = VISIBLE PART OF PLEAT
(SAME WIDTH AS UNDERFOLD)

The diagram above shows the structure of pleated fabric. The area bracketed at D is the visible part of the pleat, A-B is the underfold, and B-C is equal to the visible part of the pleat + the underfold. The width of fabric required to make 1 pleat is A-B-C, and is equal to the visible part + twice the underfold. The fabric is produced on the knitting machine using full needle rib, but wherever a fold line is required, a needle is left out of work on one or other of the beds, depending on which way the material is to fold. The out of work needle produces a permanent fold line, so the pleating produced needs no pressing.

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Using 6 stitches for the visible part, and an underfold of the same width, there will be 18 stitches in one full pleat. (Visible part = 6 + 2 x underfold, also 6, = 18).

Bring the ribber to working position, and select half pitch. For the moment, select needles only on the main bed. Bring the needles for one full pleat to MP, half on each side of centre line. With a full pleat of 18 needles, this means 9 on each side of centre line. (Needles between A and C on diagram below.)

Leaving a needle on each side of this block in NMP, continue towards each end of the main bed, bringing forward blocks of needles for 1 pleat, (18 in this example), separated by a needle in NMP. There will probably be too few needles at each end for a complete block, but leave the end bed arrangement until the ribber needles are set.

The ribber needles are to be set now. First, find on the main bed the first needle in MMP to the left of the centre line. (Marked A in diagram). Now, working towards the centre, count the number of MP needles on the main bed which are needed for the visible part of the pleat. (6 in this example). These are shown bracketed at D in the diagram. The needle below the last of this group, and slightly to its right, is a MMP needle on the ribber. (B in diagram).

Working in both directions from this MMP needle, bring forward on the ribber blocks of MP needles, each block the number of needles required for a full pleat, (18 in this example), the blocks separated, as on the main bed, by a needle in NMP. Continue to the ends of the ribber bed, even though there may not be enough needles for a full block.

You will see that you now have, on each bed, blocks of needles for one full pleat, separated by needles in NMP, but the blocks on the ribber are displaced to the right of those on the main bed by the number of needles in the visible part of the pleat.

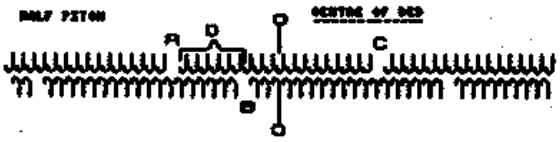

Fig 4.

READERS' LIBRARY. BOOKS ON LOAN 1987 - 1989

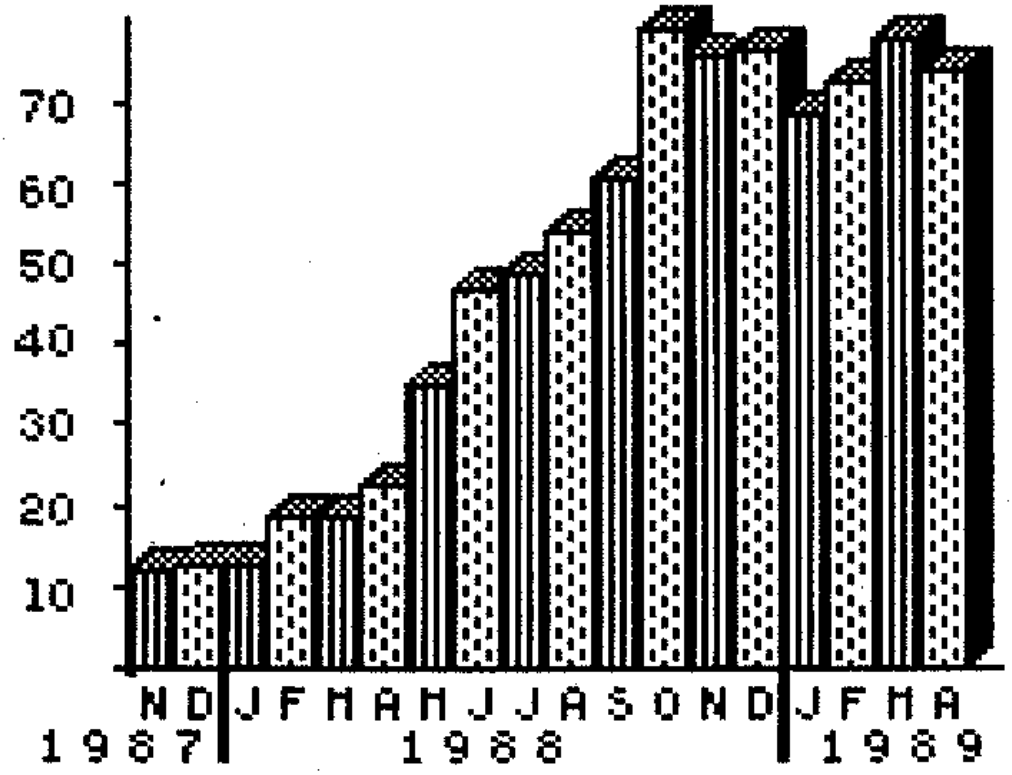

FIG 5.

Neither Pagemaker nor DTP PACK is quick to use. Preparing text, graphics and layout for every page is a slow and fiddly business, and the print speed is slow, especially in TYPELINER, when the head makes three passes for every line of type. This is why I say that Spectrum desk top publishing has its limits.

But there is no doubt that, within these limits, your Spectrum can produce very high quality work.

- - - - - - -

Next month I will be back with an article on adding a new feature to the P.C.G. DTP Pack - Multiple Copies. Yes, put in your paper, set the number of copies then go out for the evening while your printer slaves away producing your latest masterpiece.

In the meantime, if you have any comments or suggestions I would love to hear from you through FORMAT.

GLITCH REPORT

It's not very often we get errors in FORMAT. The normal typesetting process means that any program for the Spectrum is LLISTed into the system, if it works before I list it then you should be able to type it in without problems.

However, last month something went wrong. Don't ask me how I did it but in the DFLIP article I screwed up listing 4 - the Data Poker. First, the '1,32' at the end of line 100 are duplicated at the start of line 110 (remove one pair). Then there are two lines 360 (renumber the second as 365).

DFLIP should then work. My thanks to several readers who pointed out the mistake and my apology to Nev Young for mucking up his excellent utility.

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